FIRST: ALGEBRA

(1)	$\sqrt{16} + \sqrt[3]{-64} =$ …………	"0"
(2)	If $\sqrt[3]{x} = -\sqrt{25}$, then x = …………	"-125"
(3)	$\sqrt[3]{27} = \sqrt{\ldots\ldots}$	"9"
(4)	If $x^3 = 64$, then $\sqrt{x} =$ …………	"2"
(5)	If $\sqrt[3]{x} = 4$, then $\sqrt{x} =$ …………	"8"
(6)	If $\lvert x \rvert = 8$, then $\sqrt[3]{x} =$ ……………	"± 2"
(7)	$\sqrt[3]{x^6} = \sqrt{\ldots\ldots}$	"x^4"
(8)	The S.S. of the equation: $x^2+4=0$ in Q is ………	"$\varnothing$"
(9)	If $\frac{x}{2} = \frac{4}{x^2}$, then x = ………	"2"
(10)	$\sqrt{25} - \sqrt[3]{-125} =$ ……………	"10"
(11)	$\sqrt[3]{125}$ + ………… = 7	"2"
(12)	If $\sqrt[3]{x+1} = 3$, then x = …………	"26"
(13)	If $\sqrt{x-2} = 4$, then $\frac{1}{2}x =$ ………	"9"
(14)	If $x^2 - 1 = 15$, then x = ………	"± 4"
(15)	If $\sqrt[3]{x} - 2 = 1$, then x = ………	"27"
(16)	The edge length of a cube whose volume 216 cm^3 is …………… cm	"6"
(17)	The S.S. of the equation: $(x+3)^3 = 64$ in Q is ………	"{1}"

(18)	The S.S. of the equation: $(2x+1)^3 - 7 = 20$ in Q is ……	"{1}"
(19)	If $x = \sqrt[3]{\sqrt[3]{512}}$, then x = ……	"2"
(20)	Which of the following numbers is irrational: $\sqrt{\frac{1}{4}}$, $\sqrt[3]{8}$, $\sqrt{\frac{4}{9}}$, $\sqrt{2}$	"$\sqrt{2}$"
(21)	From the following numbers, the irrational number that lies between 2 and 3 is ……… $\sqrt{10}$, $\sqrt{7}$, 2.5 , $\sqrt{2}$	"$\sqrt{2}$"
(22)	If x $\in Z^+$ and $x < \sqrt{26} < x+1$, then x = ………	"5"
(23)	The area of square of side length $\sqrt{3}$ cm is …………… cm^2	"3"
(24)	The side length of a square whose area 10 cm^2 is a number $\in$ ……… (N , Z , Q , Q')	"Q'"
(25)	If x $\in Z^+$ and $x < \sqrt[3]{37} < x+1$, then x = ………	"3"
(26)	If x $\in Z^+$ and $x+1 < \sqrt{10} < x+2$, then x = ………	"2"
(27)	If x $\in$ Z and $x < -\sqrt{17} < x+1$, then x = ………	"-5"
(28)	If x $\in$ Z and $x < \left|-\sqrt{35}\right| < x+1$, then x = ………	"5"
(29)	The S.S. of the equation: $(x^3+5)(x^2-3)=0$ in Q' is …………	"$\{\sqrt{3},-\sqrt{3},\sqrt[3]{-5}\}$"
(30)	$Q \cup Q'$ = ………	"R"
(31)	$Q \cap Q'$ = ………	"$\varnothing$"
(32)	R – Q = ………	"Q'"
(33)	R – Q' = ………	"Q"

(34)	$R^+ \cap R^- =$ …………	"$\varnothing$"
(35)	$R^+ \cup R^- =$ …………	"R^*"
(36)	$R^+ - R^* =$ …………	"{0}"
(37)	The S.S. of $x^2 + 1 = 0$ in R is ………	"$\varnothing$"
(38)	The S.S. of the equation: $(x^2+5)(x^2-3)=0$ in R is …………	"$\{\sqrt{3},-\sqrt{3}\}$"
(39)	The S.S. of the equation: $x\,(x^2-1)=0$ in R is …………	"{0,1,-1}"
(40)	The S.S. of the equation: $(x-2)^2 - 1 = 15$ in R is …………	"{6,-2}"
(41)	The set of real number as an interval ………	"]-∞,∞["
(42)	The set of positive real number as an interval is ………	"]0,∞["
(43)	The set of negative real number as an interval is ………	"]-∞,0["
(44)	The set of non-negative real number as an interval is ………	"[0, ∞["
(45)	3 ……… [3,5] ($\in$ or $\notin$)	"$\in$"
(46)	[-1,5] -]-1,5[= ……………	"{-1,5}"
(47)	[-1,5] – {-1,5} = ……………	"]-1,5["
(48)	[-1,5] – [-1,5] = ……………	"$\varnothing$"
(49)	[-1,5] $\cap$]-1,5[= ……………	"]-1,5["
(50)	$R^+ \cap$ [-1,3] = …………	"]0,3]"
(51)	{8,9,10} -]8,10] = ………	"{8}"

(52)	$Z^+ \cap [-1,5] = \dots\dots\dots$	"{1,2,3,4,5}"
(53)	If $x \in [-1,5]$, then $x^2 \in \dots\dots\dots$	"[0,25]"
(54)	The sum of all real numbers in the interval [-80,80] is …………	"Zero"
(55)	If X = [-1,3] and Y = [0,5], find using the number line: (a) $X \cap Y = \dots\dots\dots$ (b) $X \cup Y = \dots\dots\dots$ © $X - Y = \dots\dots\dots$	"[0,3]" "[-1,5]" "[-1,0["
(56)	If X =]-∞,3] and Y =]-1,5], find using the number line: (a) $X \cap Y = \dots\dots\dots$ (b) $X \cup Y = \dots\dots\dots$ © $X' = \dots\dots\dots$	"]-1,3]" "]-∞,5]" "]3,∞["
(57)	$\sqrt{7} + \sqrt{7} = \dots\dots$	"[$2\sqrt{7}$]"
(58)	$\left(2\sqrt[3]{5}\right)^3 = \dots\dots$	"40"
(59)	The additive inverse of $\frac{6}{\sqrt{3}}$ is ………	"[$-2\sqrt{3}$]"
(60)	The additive inverse of $\sqrt{3} - \sqrt{7}$ is ………	"[$\sqrt{7} - \sqrt{3}$]"
(61)	The multiplicative inverse of $\frac{\sqrt{2}}{6}$ is ………	"[$3\sqrt{2}$]"
(62)	If $X = \sqrt{2} + 5$ and $Y = \sqrt{2} - 5$, then $(X + Y)^2 = \dots\dots$	"8"
(63)	If $X^2 = \left(2\sqrt{3} - \sqrt{7}\right)\left(2\sqrt{3} + \sqrt{7}\right)$, then X = ……	"$\pm\sqrt{5}$"
(64)	If $X = \sqrt{5} + \sqrt{3}$ and $Y = \sqrt{5} - \sqrt{3}$, then XY=………	"2"
(65)	The conjugate of $\sqrt{2} - \sqrt{7}$ is …………	"$\sqrt{2} + \sqrt{7}$"

(66)	If $x = \frac{\sqrt{6}}{\sqrt{2}}$, then x^{-1} = ………	"$\frac{\sqrt{3}}{3}$"
(67)	$\sqrt{5}$, $2\sqrt{5}$, $3\sqrt{5}$, $4\sqrt{5}$, ……… (in the same pattern)	"$5\sqrt{5}$"
(68)	If $2\sqrt{27} - 2\sqrt{48} = x\sqrt{3}$, then x = ………	"-2"
(69)	If $a^x = 6$ and $a^{-y} = \sqrt{3}$, then a^{x+y} = ………	"$2\sqrt{3}$"
(70)	If $\sqrt{x} = 3 + \sqrt{2}$, then x = ………	"$11 + 6\sqrt{2}$"
(71)	Half of $\sqrt{28}$ is …………	"$\sqrt{7}$"
(72)	Simplify: $2\sqrt{5} + 4\sqrt{20} + 5\sqrt{\frac{1}{5}}$	"$9\sqrt{5}$"
(73)	If $x = \sqrt{5} + \sqrt{3}$ and y = $\sqrt{5} - \sqrt{3}$, find the value of $x^2 + 2xy + y^2$.	"20"
(74)	Simplify: $\sqrt{50} - \sqrt{18} + \sqrt{32}$	"$6\sqrt{2}$"
(75)	If $x = \sqrt{5} + 2$ and y = $\sqrt{5} - 2$, find the value of $\frac{x+y}{xy}$.	"$2\sqrt{5}$"
(76)	Simplify: $2\sqrt{18} - \sqrt{50} + \frac{1}{3}\sqrt{162}$	"$\sqrt{2}$"
(77)	If $x = \sqrt{5} + \sqrt{2}$ and xy = 3, find the value of $x^2 - 2xy + y^2$	"8"
(78)	If $x = \frac{4}{\sqrt{7} - \sqrt{3}}$ and $y = \sqrt{7} - \sqrt{3}$, (a) Prove that x and y are conjugate. (b) Find the value of xy and $(x+y)^2$.	"x= $\sqrt{7} + \sqrt{3}$" "4" "28"
(79)	If $x = \sqrt{5} + \sqrt{3}$ and $2y^{-1} = \sqrt{5} + \sqrt{3}$, find the value of $x^2 - y^2$.	"$4\sqrt{15}$"
(80)	If $x^2 - y^2 = 60$ and $x+y = 5\sqrt{6}$, then x-y = ……	"$2\sqrt{6}$"

(81)	The area of rectangle whose dimensions are $(\sqrt{3}+1)$cm and $(\sqrt{3}-1)$cm is ……….. cm^2.	"2"
(82)	Simplify: $\sqrt{8}+\sqrt{75}-\frac{1}{2}\sqrt{12}-4\sqrt{\frac{1}{2}}$	"$4\sqrt{3}$"
(83)	If $y=\sqrt{2+\sqrt{3}}$, then y^4-2y^2+1 = ………	"$4+2\sqrt{3}$"
(84)	The nearest integer to $\sqrt[3]{-28}$ is ………	"-3"
(85)	$\pi \in$ ……….. (Q , Q' , Z , N)	"Q'"
(86)	If $2x=\sqrt{12}$, then x = ………	"$\sqrt{3}$"
(87)	The slope of vertical line is ……………	"undefined"
(88)	The slope of horizontal line is ……………	"0"
(89)	The volume of the cuboid whose dimensions are $\sqrt{2}$ cm, $\sqrt{3}$ cm and $\sqrt{6}$ cm is ……….. cm^3.	"6"
(90)	If (k,3) satisfies the relation x+y=1, then k=…	"-2"
(91)	If (3k,2k) lies on the straight line x-3y=9, then k = ……	"-3"
(92)	The volume of a cube is $27cm^3$, then the area of its face = ……….. cm^2.	"9"
(93)	The relation 8x+3y=24 represented by a straight line intersects y-axis at the point ………	"(0,8)"
(94)	The point that satisfies the relation x+2y=5 is (1,……)	"2"
(95)	The slope of the straight line which perpendicular to y-axis is ………..	"0"
(96)	The slope of the straight line which perpendicular to x-axis is ………..	"undefined"

(97)	If A(3,2) and B(x,1) and the slope of $\overleftrightarrow{AB}$ = 1, then x = ………	"2"
(98)	If the volume of a sphere is $\frac{9}{16}\pi\,cm^3$, then the length of its diameter = ………… cm	"$\frac{3}{2}$"
(99)	If (2,-5) satisfies the relation 3x-y+c=0, then c = ………	"-11"
(100)	The cube whose volume 8 cm^3, the sum of all its edges = ………… cm.	"24"
(101)	A cube of volume 1 cm^3, its lateral area = … cm^2	"4"
(102)	The slope of straight line which passes through the two points (3,2) and (4,2) is ………	"0"
(103)	$\sqrt[3]{2}+\sqrt[3]{2}=\sqrt[3]{\ldots}$	"16"
(104)	The volume of a sphere of diameter length 6cm is ……… π cm^3.	"36"
(105)	The S.S. of the inequality: $\sqrt{5}x \le 5$ in R is ……	"$]-\infty, \sqrt{5}]$"
(106)	The S.S. of the inequality: $-2x \le 0$ in R is ……	"$[0,\infty[$"
(107)	If $1 \le x \le 4$, then $2x - 1 \in$ …………	"[1,7]"
(108)	The intersection point of the two straight lines x=0 and y=0 is …………	"(0,0)"
(109)	The intersection point of the two straight lines x-1=0 and y+4=0 is …………	"(1,-4)"
(110)	A sum of all edge lengths of a cube is 48 cm, then the area of its face = ……… cm^2.	"16"
(111)	In the relation y = 3x + 4, if x=1, then y = ……	"7"
(112)	If the area of a sphere is 4π cm^2, then its radius length = ………… cm.	"1"

(113)	The S.S. of the equation: $\sqrt{3}x - 2 = 1$ in R is	"$\{\sqrt{3}\}$"
(114)	Simplify: $\frac{1}{2}\sqrt{24} - 3\sqrt{\frac{2}{3}}$	"0"
(115)	The volume of a cube is $5\sqrt{5}\,cm^3$, its lateral area is .... cm^2.	"20"
(116)	The lateral area of the cylinder = ...	"$2\pi rh$"
(117)	The total area of the cylinder = ...	"$2\pi r(h+r)$"
(118)	The mean of the values: 3, 5 and 7 is	"5"
(119)	If the order of median of values is the fourth, then the number of these values is	"7"
(120)	If the mode of the values: 4,11,8 and 2x is 4, then x = ...	"2"
(121)	If the mean of 6 values is 5, then the sum of these values = ...	"30"
(122)	If the mode of the values: 5,7,8 and x^3 is 8, then 3x = ...	"6"
(123)	If the mode of the values: 5,9,5,x-2 and 9 is 9, then x = ...	"11"
(124)	If the intersection point of the ascending and descending cumulative frequency curves is (31,50), then the sum of the frequencies = ... and the mode is	"62" "50"
(125)	The median of values: 34,23,25,40,21,4 is	"24"
(126)	The center of the set whose upper limit 8 and its lower limit 4 is	"6"
(127)	If the lower limit of a set is 4 and its center is 6, then its upper limit is	"8"

(128)	If the mean of values: 18,23,29,2k-1,k is 18, then k = ………	"7"
(129)	Mode, mean and median are called ……………………… measurements.	"central tendency"
(130)	The mean of frequency distribution =………	"$\frac{\sum x \times f}{\sum f}$"
(131)	If the order of median of a frequency distribution is 30, then the sum of these frequencies is …………	"60"
(132)	If the mean of values: 4,2,x+1 is 4, then x=……	"5"

Essay Problems

(133)	If 2x+2y=10, then the arithmetic mean of x and y is ………………	"2.5"
(134)	If the order of median of values is 5^{th} and 6^{th}, then the number of these values is …………	"10"
(135)	Simplify: $2\sqrt{5}(\sqrt{5}-2)+\sqrt{20}-10\sqrt{\frac{1}{5}}$	"$10-4\sqrt{5}$"
(136)	Simplify: $\sqrt[3]{128}+\sqrt[3]{16}-2\sqrt[3]{54}$	"0"
(137)	Simplify: $\sqrt{125}-\sqrt[3]{2}+\frac{1}{2}\sqrt[3]{16}+\sqrt{20}$	"$7\sqrt{5}$"
(138)	Find the S.S. of the inequality: $2x + 3 \leq 1$ in R, and represent it on the number line.	"$]-\infty,-1]$"
(139)	Find the S.S. of the inequality: $1< 2x + 3 \leq 9$ in R, and represent it on the number line.	"$]-1,3]$"
(140)	Find the S.S. of the inequality: $9 - 2x < 7$ in R, and represent it on the number line.	"$]1,\infty[$"
(141)	Find the S.S. of the inequality: $7x+3 < 6x+5$ in R, and represent it on the number line.	"$]-\infty,2[$"

(142)	Find the S.S. of the inequality: $2x+3 \le 5x+3 \le 2x+9$ in R, and represent it on the number line.	"[0,2]"
(143)	Find the S.S. of the inequality: $16 \ge 3x+7 \ge -2$ in R, and represent it on the number line.	"[-3,3]"
(144)	A right circular cylinder, its hieght equal to its radius length, its volume is 216π cm^3. Find its height.	"6 cm"
(145)	A sphere of volume 36π cm^3. Find its surface area in the term of π.	"36π cm^2"
(146)	A metallic sphere its diameter is 6 cm, was melted and converted to a right circular cylinder the radius length of its base is 3 cm. Find the height of the cylinder.	"4 cm"
(147)	A right circular cylinder, the radius length of its base is 5 cm and its height is 7 cm. Find the volume of the cylinder and its lateral area.	"550 cm^3" "220 cm^2"
(148)	A right circular cylinder of volume 54π cm^3, and its height equals to the diameter length of its base. Find its lateral area in term of π.	"36π cm^2"
(149)	Find three ordered pairs satisfies the relation: $x + y = 5$ and represent it graphically.	(0,5) (5,0) (1,4)
(150)	If the slope of the straight line which passes throught the points (3,-1) and (7,k) is $\frac{3}{4}$, find the value of k.	"2"
(151)	If the straight line that passes through the points (3,4) and (2,k) is parallel to x-axis, then find the value of k.	"4"
(152)	Find the slope of $\overleftrightarrow{AB}$, where A(-1,3) and B(2,5). Is C(8,1) lies on $\overleftrightarrow{AB}$?	"$\frac{2}{3}$"

(153) If (2k,k) satisfies the relation x+y=15, find the value of k.

(154) Prove that A(4,-3), B(-6,7) and C(5,-4) are collinear.

(155) If (k,3) lies on the stright line that represents the relation kx+y=12, find the value of k. "±3"

(156) If (a,2a) satisfies the relation y=3x-1, find the value of a. "1"

(157) If (-3,2) satisfies the relation 3x+by=1, find the value of $\sqrt{b+4}$. "3"

(158) If A(1,1), B(2,2) and C(3,k) are collinear, find the value of k. "3"

(159) Represent graphically the relation x-4y=4

(160) Represent graphically the relation y=2x+1

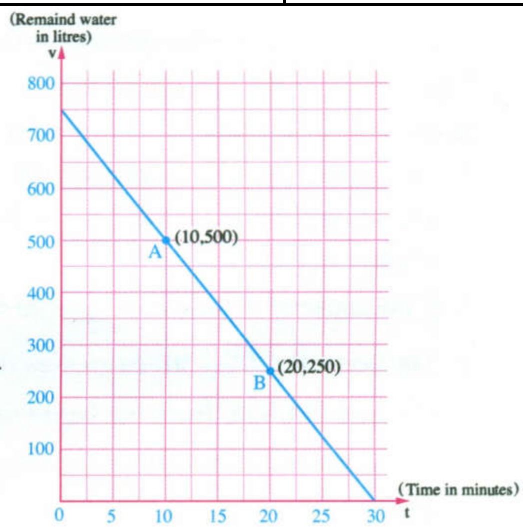
(161) From the following frequency distribution:

Sets	5-	15-	25-	35-	45-	Total
frequency	4	5	k	3	2	20

(a) Find the value of k. "6"

(b) Calculate the arithmetic mean. "27"

(162) A tank of water is filled with water completely. A tap is opened below the tank to empty it , the opposite graph represents the relation between the time (t) in minutes and the amount of water remained in the tank (v) in litres :



1. What is the greatest capacity of the tank ?
2. What is the time needed to empty the tank?
3. What is the amount remained in the tank after 20 minutes ?
4. What is the rate of emptying the tank ?

SECOND: GEOMETRY

Complete:

(1)	If 4 cm and 6 cm are two side lengths of an isosceles triangle, then the length of the 3rd side is ……… cm	"8"
(2)	The measure of the exterior angle of the equilateral triangle is …………°	"120"
(3)	In Δ ABC if $m(\angle B) > m(\angle C)$, then AC …… AB	">"
(4)	If two angles of a triangle are congruent, then the two sides opposite to these two angles are ………………… and the triangle is an …………………	"congruent" "isosceles"
(5)	The longest side in the right-angled triangle is the ………………………	"hypotenuse"
(6)	The bisector of the vertex angle of the isosceles triangle ……………… the base and ……………… to it.	"bisect" "perpendicular"
(7)	The isosceles triangle has …… axes of symmetry.	"1"
(8)	The equilateral triangle has … axes of symmetry.	"3"
(9)	The scalene triangle has …… axes of symmetry.	"0"
(10)	Triangle of side lengths 4 cm and 9 cm has one axis of symmetry, then the length of the 3rd side is ………… cm	"9"
(11)	The median of the isosceles triangle drawn from its vertex …………… the vertex angle and ………………… to the base.	"bisect" "perpendicular"
(12)	If $C \in$ the axis of $\overleftrightarrow{AB}$, then ……… = ………	"AC=BC"
(13)	In a triangle, if two sides have unequal lengths, then the longer is opposite to the angle of the ………………………………	"greater measure"

(14)	In a triangle, if two angles are unequal in measure, then the greater angle in measure is opposite to the side of the ………………………………	"greater length"
(15)	In △ ABC, if $m(\angle A)=120°$, then the longest side is …………	"BC"
(16)	In △ ABC, if $m(\angle C)=70°$ and $m(\angle B)=60°$, then AB ……… AC	">"
(17)	ABC is an isosceles triangle, $m(\angle A)=100°$, then $m(\angle B)=$ …………°	"40"
(18)	ABC is an isosceles triangle, $m(\angle A)=60°$ and its perimeter is 15 cm, then AB=…… cm.	"5"
(19)	If the measure of an angle of the isosceles triangle is 60°, then it's called ……………	"equilateral"
(20)	The perpendicular bisector of a line segment is called ……………………………………	"axis of symmetry"
(21)	Of the lengths of two sides in a triangle are 2 cm and 7 cm, then the length of the third side is ∈] ……, …… [	"]5,9["
(22)	Any point lies on the axis of a line segment is at ……………………………… from its terminals.	"equal distances"
(23)	The length of any side in a triangle is …………… the sum of the lengths of the two other sides.	"less than"
(24)	If ABC is a right-angled triangle at B, then the longest side is …………	"AC"
(25)	The triangle which has two angles of measures 45° and 65° has …… axes of symmetry.	"0"
(26)	In △ ABC, if AB=AC and $m(\angle A)=70°$, then $m(\angle B)=$ ………°	"55"
(27)	In △ ABC, AB + BC − AC > ……	"0"
(28)	In △ ABC, if AB > AC, then $m(\angle C)$……$m(\angle B)$	">"
(29)	The base angles of the isosceles triangle are ……	"congruent"

(30)	In the isosceles right-angles triangle, the measure of any angle of its base is ……°	"45"
(31)	If x,7,4 are lengths of sides of a triangle, then ……… < x < ………	"3<x<11"
(32)	If the measure of an angle in a right-angled triangle is 45°, then the triangle is ………………	"an isosceles"
(33)	The numbers 3,6,…… can be the lengths of sides of an isosceles triangle.	"6"
(34)	The triangle whose side's lengths are 2 cm, 5 cm and (x+3) cm, is an isosceles if x = ……	"2"

Choose the correct answer

(1) The medians of the triangle intersect at …… point.

a 1 b 2 c 3 d 4

(2) The right angled-triangle has ……… medians.

a 0 b 1 c 2 d 3

(3) The point of intersection of medians in the triangle divides each of them in the ration ……… from the vertex.

a 1:3 b 3:1 c 2:1 d 1:2

(4) The point of intersection of medians in the triangle divides each of them in the ration ……… from the base.

a 1:3 b 3:1 c 2:1 d 1:2

(5) If $\overline{AD}$ is a median in Δ ABC, M is the point of intersection of the medians, then AM = …… AD

a $\frac{1}{3}$ b $\frac{2}{3}$ c $\frac{1}{2}$ d $\frac{1}{4}$

(6) If $\overline{AD}$ is a median in Δ ABC, M is the point of intersection of the medians, then AM = …… MD

a) 2 b) $\frac{1}{2}$ c) 3 d) $\frac{1}{3}$

(7) The length of the median drawn from the vertex of the right angle in the right-angled triangle = …… the length of the hypotenuse.

a) 2 b) $\frac{1}{3}$ c) $\frac{1}{2}$ d) 3

(8) The length of the hypotenuse of the right-angled triangle = …… the length of the median which drawn from the vertex of the right angle.

a) half b) twice c) third d) quarter

(9) If Δ ABC is a right-angled at B, AB=6 cm and BC=8 cm, then the length of the median drawn from B = ……… cm

a) 10 b) 4 c) 5 d) 3

(10) If Δ ABC is a right-angled at B, AC=20 cm, then the length of the median drawn from B = ……… cm

a) 10 b) 8 c) 6 d) 5

(11) In Δ ABC, $m(\angle B)=90^\circ$, AC=12 cm and $\overline{BD}$ is a median, then BD = ……… cm

a) 12 b) 6 c) 24 d) 10

(12) The length of the side opposite to the angle of measure 30° in the right-angle triangle ……… the length of the hypotenuse.

a) twice b) half c) square d) equal

(13) In Δ ABC, $m(\angle B)=90^\circ$ and $m(\angle A)=30^\circ$, then BC= ……

a) $\frac{1}{2}AB$ b) $\frac{1}{2}AC$ c) 2AB d) 2AC

(14) In Δ ABC, $m(\angle B)=90^\circ$ and $m(\angle A)=60^\circ$, then AC= ...... AB

ⓐ 2 ⓑ 3 ⓒ $\frac{1}{2}$ ⓓ $\frac{1}{3}$

(15) In Δ ABC, $m(\angle B) = 90^\circ$, $m(\angle A) = 30^\circ$ and AC = 10 cm, then BC = ... cm

ⓐ 20 ⓑ 15 ⓒ 10 ⓓ 5

(16) The measure of exterior angle of the equilateral triangle is ......°

ⓐ 30 ⓑ 60 ⓒ 120 ⓓ 180

(17) In Δ ABC, if AB = AC, then the exterior angle at the vertex C is ....

ⓐ acute ⓑ obtuse ⓒ right ⓓ reflex

(18) In Δ ABC, if AB = AC and $m(\angle A) = 60^\circ$, if its perimeter is 18 cm, then BC = ... cm.

ⓐ 18 ⓑ 3 ⓒ 6 ⓓ 60

(19) If the measure of one of the two base angles of the isosceles triangle is 40°, then the measure of its vertex angle is ......°

ⓐ 40 ⓑ 100 ⓒ 80 ⓓ 50

(20) ABC is an isosceles triangle, if $m(\angle A)=100^\circ$, then $m(\angle B)=$......°

ⓐ 100 ⓑ 180 ⓒ 80 ⓓ 40

(21) In Δ ABC, if AB = AC and $m(\angle A)= 40^\circ$, then $m(\angle C)=$......°

ⓐ 40 ⓑ 70 ⓒ 140 ⓓ 50

(22) The triangle which hasn't any axes of symmetry is ....

ⓐ scalene ⓑ isosceles ⓒ equilateral ⓓ otherwise

(23) If Δ ABC has one axis of symmetry and $m(\angle B) = 140°$, then $m(\angle A)$ = ………°

ⓐ 30 ⓑ 20 ⓒ 40 ⓓ 60

(24) In Δ ABC, if $m(\angle B)$ = 65° and $m(\angle A)$ = 50°, then it has …… axes (axis) of symmetry.

ⓐ 0 ⓑ 1 ⓒ 2 ⓓ 3

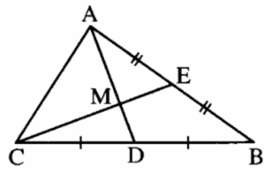
Essay Problems

(1) **In the opposite figure :**

E is the midpoint of $\overline{AB}$, D is the midpoint of $\overline{BC}$

$\overline{AD} \cap \overline{CE} = \{M\}$, MC = 5 cm. and MD = 2 cm.

Find : The length of each of $\overline{AD}$ and $\overline{ME}$.



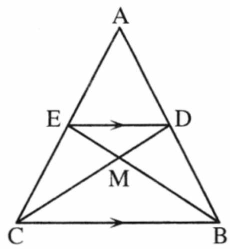
(2) **In the opposite figure :**

ABC is a triangle in which $\overline{CD}$,

$\overline{BE}$ two medians intersects at M ,

if : DC = 9 cm. , BM = 4 cm. , BC = 8 cm.

Find : The perimeter of Δ MDE

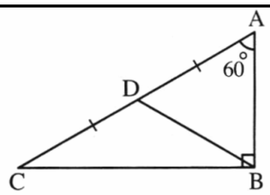


(3) **In the opposite figure :** Δ ABC , AC = 8 cm. ,

m ($\angle$ BAC) = 60° , m ($\angle$ ABC) = 90° ,

D is the midpoint of $\overline{AC}$

Find : The perimeter of Δ ABD



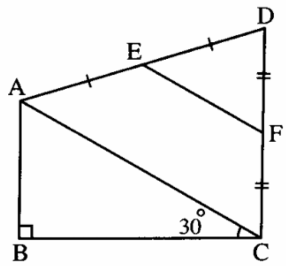
(4) **In the opposite figure :**

m ($\angle$ B) = 90° ,

m ($\angle$ ACB) = 30° ,

E , F are midpoints of $\overline{AD}$, $\overline{DC}$

Prove that : AB = EF



(5)

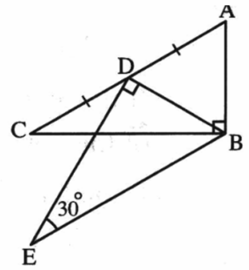
In the opposite figure :

m (∠ ABC) = m (∠ BDE) = 90°

, m (∠ E) = 30°

, D is the midpoint of $\overline{AC}$

Prove that : AC = BE



(6)

In the opposite figure :

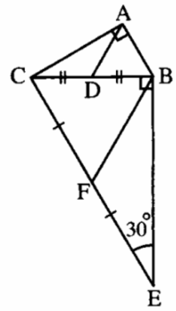
m (∠ BAC) = m (∠ CBE) = 90° ,

m (∠ BEC) = 30° ,

D and F are the midpoints of $\overline{BC}$

and $\overline{CE}$ respectively.

Prove that : AD = $\frac{1}{2}$ BF



(7)

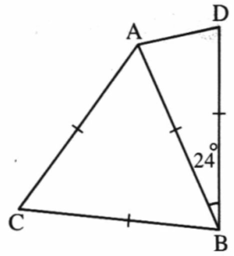
In the opposite figure :

ACBD is a quadrilateral in which :

AB = BC = CA = BD

, m (∠ ABD) = 24°

Find : m (∠ CAD)



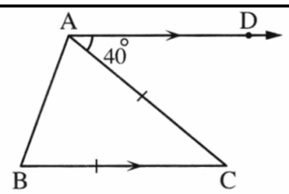
(8)

In the opposite figure :

ABC is a triangle ,

AC = BC , $\overrightarrow{AD}$ // $\overline{BC}$, m (∠ DAC) = 40°

Find : The measure of angles in the Δ ABC



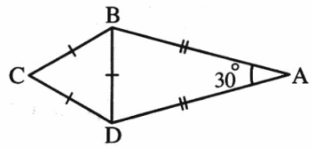
(9)

In the opposite figure :

AB = AD , m (∠ A) = 30° ,

CB = BD = CD

Find : m (∠ CBA)



(10)

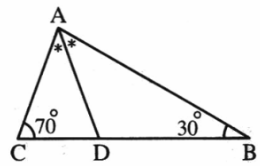
In the opposite figure :

$\overrightarrow{AD}$ bisects ∠ BAC

, m (∠ B) = 30°

, m (∠ C) = 70°

Prove that : Δ ADC is isosceles triangle.

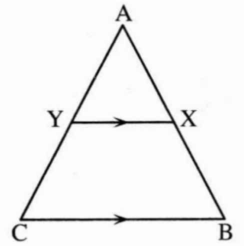


(11) **In the opposite figure :**

ABC is a triangle in which AB = AC , $X \in \overline{AB}$,

$Y \in \overline{AC}$ and $\overline{XY} \parallel \overline{BC}$

Prove that : the triangle AXY is isosceles triangle.



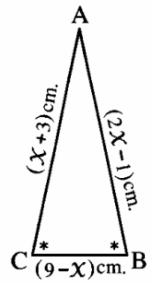
(12) **In the opposite figure :**

m (∠ B) = m (∠ C) , AB = $(2X - 1)$ cm.

AC = $(X + 3)$ cm.

, BC = $(9 - X)$ cm.

Find with proof the perimeter of Δ ABC



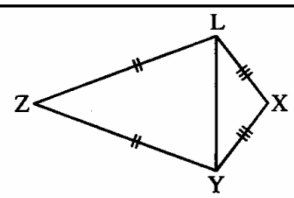
(13) **In the opposite figure :**

XL = XY , ZL = ZY ,

M is the midpoint of $\overline{LY}$

Prove that :

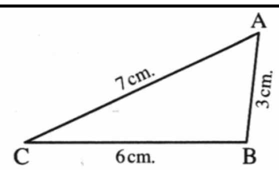
X , M , Z are on the same straight line.



(14) **In the opposite figure :**

Arrange the angles of Δ ABC

descendingly due to their measures

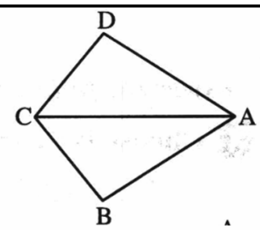


(15) **In the opposite figure :**

AD > DC

and AB > BC

Prove that : m (∠ BCD) > m (∠ BAD)

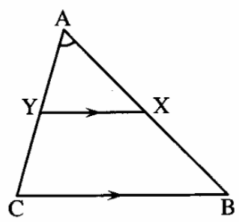


(16) **In the opposite figure :**

ABC is a triangle ,

AB > AC , $\overline{XY} \parallel \overline{BC}$

Prove that : m (∠ AYX) > m (∠ AXY)



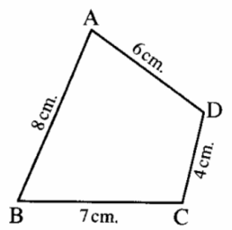
(17) **In the opposite figure :**

AB = 8 cm. ,

BC = 7 cm. ,

CD = 4 cm. , AD = 6 cm.

Prove that : m (∠ BCD) > m (∠ BAD)

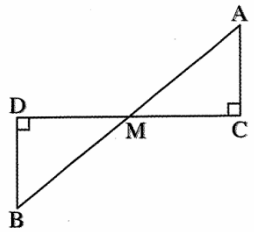


(18) **In the opposite figure :**

$\overline{AB} \cap \overline{CD} = \{M\}$, $\overline{AC} \perp \overline{CD}$ and $\overline{BD} \perp \overline{CD}$

Prove that :

$AB > CD$



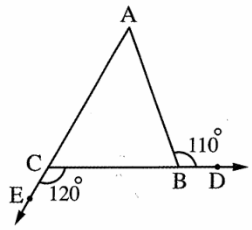
(19) **In the opposite figure :**

ABC is a triangle , $D \in \overrightarrow{CB}$,

$E \in \overrightarrow{AC}$, $m(\angle ABD) = 110°$

and $m(\angle BCE) = 120°$

Prove that : $AB > BC$

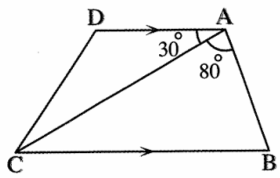


(20) **In the opposite figure :**

$\overrightarrow{AD} // \overline{BC}$, $m(\angle BAC) = 80°$ and $m(\angle DAC) = 30°$

Prove that :

$BC > AB$



(21) **In the opposite figure :**

ABC is a triangle in which M is a point inside it.

Prove that :

$MA + MB + MC > \frac{1}{2}$ the perimeter of the triangle ABC